

In the claims:

1. (Currently amended) An isolated nucleic acid or its complement comprising nucleic acid encoding a protein according to comprising SEQ ID NO: 4.
2. (Currently amended) An isolated nucleic acid or its complement according to claim 1, wherein said nucleic acid comprises [[a]] the nucleic acid as set forth in SEQ ID NO: 1.
3. (Currently amended) An isolated nucleic acid or its complement according to claim 2, wherein said nucleic acid comprises [[a]] the nucleic acid as set forth in nucleotides 81-1024 of SEQ ID NO: 1.
4. (Currently amended) An isolated nucleic acid or its complement encoding a protein which participates in meiocyte formation in a plant, wherein said nucleic acid comprises naturally occurring DNA, or DNA degenerate to said naturally occurring DNA, from a plant that hybridizes to the DNA of (a) SEQ ID NO:2 or SEQ ID NO:3, or portions thereof, wherein said portions comprise at least 40 nucleotides, or (b) SEQ ID NO:1, or portions thereof, wherein said portions comprise at least 40 nucleotides, under moderately stringent conditions, wherein the naturally occurring DNA has at least about 70% identity to the DNA of (a) or (b), and wherein said naturally occurring DNA encodes said a protein which participates in meiocyte formation in a plant.
5. (Currently amended) An isolated nucleic acid or its complement according to claim 4 having at least about 70% identity to (a) nucleotides 81-1024 of SEQ ID NO:1, or a portion thereof, wherein said portion comprises at least 40 nucleotides, or (b) variations of (a) which encode the same amino acid sequence as encoded by (a), but employ different codons for some of the amino acids.

6. (Original) An isolated nucleic acid encoding a protein involved in meiocyte formation in a plant, wherein said protein comprises:

- (a) the same amino acid sequence as set forth in SEQ ID NO: 4, or
- (b) an amino acid sequence having at least 80% homology to the amino acid sequence as set forth in SEQ ID NO: 4 and which is involved in meiocyte formation in a plant.

7. (Withdrawn) An isolated nucleic acid according to any one of claims 1 to 6, wherein said nucleic acid is mutated to block, reduce, or increase formation of meiocytes in a plant.

8. (Withdrawn) An isolated nucleic acid according to claim 7, wherein said nucleic acid is mutated by insertion of one or more genetic elements.

9. (Withdrawn) An isolated nucleic acid according to claim 8, wherein said genetic elements comprise a Ds sequence.

10. (Withdrawn) A protein required for the formation of meiocytes in a plant, wherein said protein comprises:

- (a) the same amino acid sequence as set forth in SEQ ID NO: 4, or
- (b) an amino acid sequence having at least 80% homology to the amino acid sequence as set forth in SEQ ID NO: 4 and which is involved in the formation of meiocytes in a plant.

11. (Withdrawn) An antibody which recognizes and binds to a protein according to claim 10.

12. (Withdrawn) A fusion protein comprising any one of the amino acid sequences according to claim 10.

13. (Currently amended) A plant transformed with an isolated nucleic acid sequence or its complement comprising nucleic acid encoding a protein ~~according to~~ comprising SEQ ID NO: 4.

14. (Currently amended) A plant transformed with an isolated nucleic acid sequence or its complement according to claim 13, wherein said nucleic acid sequence comprises [[a]] the nucleic acid as set forth in SEQ ID NO: 1.

15. (Currently amended) A plant transformed with an isolated nucleic acid sequence or its complement according to claim 14, wherein said nucleic acid sequence comprises [[a]] the nucleic acid sequence as set forth in nucleotides 81-1024 of SEQ ID NO: 1.

16. (Withdrawn) A plant according to claim 13, 14 or 15 wherein said nucleic acid is mutated to block, reduce or increase the formation of meiocytes in said plant.

17. (Currently amended) A plant seed transformed with an isolated nucleic acid sequence or its complement comprising nucleic acid encoding a protein ~~according to~~ comprising SEQ ID NO: 4.

18. (Currently amended) A plant seed transformed with [[an]] the isolated nucleic acid sequence or its complement according to claim 17, wherein said nucleic acid sequence comprises a nucleic acid as set forth in SEQ ID NO: 1.

19. (Currently amended) A plant seed transformed with an isolated nucleic acid sequence or its complement according to claim 18, wherein said nucleic acid sequence comprises [[a]] the nucleic acid sequence as set forth in nucleotides 81-1024 of SEQ ID NO: 1.

20. (Withdrawn) A plant seed according to claim 17,18 or 19 wherein said nucleic acid is mutated to block, reduce or increase the formation of meiocytes in a plant.

21. (Currently amended) A plant cell transformed with an isolated nucleic acid sequence or its complement comprising nucleic acid encoding a protein ~~according to comprising~~ SEQ ID NO: 4.

22. (Currently amended) A plant cell transformed with [[an]] the isolated nucleic acid sequence or its complement according to claim 21, wherein said nucleic acid sequence comprises a nucleic acid as set forth in SEQ ID NO: 1.

23. (Currently amended) A plant cell transformed with [[an]] the isolated nucleic acid sequence or its complement according to claim 22, wherein said nucleic acid sequence comprises a nucleic acid sequence as set forth in nucleotides 81-1024 of SEQ ID NO: 1.

24. (Withdrawn) A plant cell according to claim 21, 22 or 23 wherein said nucleic acid is mutated to block, reduce or increase the formation of meiocytes in a plant.

25. (Currently amended) A method of producing a transgenic plant which is capable of bearing substantially seedless fruits or substantially pollenless flowers, comprising the step of transforming a plant with a nucleic acid or its complement comprising nucleic acid encoding a protein ~~according to comprising~~ SEQ ID NO: 4.

26. (Currently amended) A method of producing a transgenic plant which is capable of bearing substantially seedless fruits or substantially pollenless flowers, comprising the step of transforming a plant with [[a]] the nucleic acid sequence or its complement according to claim 25, wherein said nucleic acid sequence comprises a nucleic acid sequence as set forth in SEQ ID NO: 1.

27. (Currently amended) A method of producing a transgenic plant which is capable of bearing substantially seedless fruits or substantially pollenless flowers, comprising the step of transforming a plant with [[a]] the nucleic acid sequence or its complement according to claim 26, wherein said nucleic acid sequence comprises a nucleic acid sequence as set forth in nucleotides 81-1024 of SEQ ID NO: 1.

28. (Withdrawn) A method according to claim 25, 26 or 27, wherein said nucleic acid is mutated to block, reduce or increase the formation of meiocytes in said plant, thereby rendering said plant capable of bearing said seedless fruits or pollenless flowers.

29. (Withdrawn) A method according to claim 28, wherein said nucleic acid is a nucleic acid according to claim 27.

30. (Withdrawn) A method according to claim 28, wherein said nucleic acid is mutated by insertion of one or more genetic elements.

31. (Withdrawn) A method according to claim 30, wherein said genetic elements comprise a Ds sequence.

32. (Withdrawn) A method of producing substantially seedless fruits or substantially pollenless flowers in a plant, comprising the step of expressing in said plant an isolated nucleic acid sequence or its complement comprising a nucleic acid sequence encoding a protein according to SEQ ID NO: 4, wherein said nucleic acid is mutated to block, reduce or increase the formation of meiocytes and thereby produce said seedless fruits or pollenless flowers in said plant.

33. (Withdrawn) A method of producing substantially seedless fruits or substantially pollenless flowers in a plant, comprising the step of expressing in said plant an isolated

nucleic acid sequence or its complement according to claim 32, wherein said nucleic acid sequence comprises a nucleic acid sequence as set forth in SEQ ID NO: 1, wherein said nucleic acid is mutated to block, reduce or increase the formation of meiocytes and thereby produce said seedless fruits or pollenless flowers in said plant.

34. (Withdrawn) A method of producing substantially seedless fruits or substantially pollenless flowers in a plant, comprising the step of expressing in said plant an isolated nucleic acid sequence or its complement according to claim 33, wherein said nucleic acid sequence comprises a nucleic acid sequence as set forth in nucleotides 81-1024 of SEQ ID NO: 1, wherein said nucleic acid is mutated to block, reduce or increase the formation of meiocytes and thereby produce said seedless fruits or pollenless flowers in said plant.

35. (Withdrawn) A method according to claim 32,33 or 34, wherein said nucleic acid is mutated by insertion of one or more genetic elements.

36. (Withdrawn) A method according to claim 35, wherein said genetic elements comprise a Ds sequence.

37. (Withdrawn) An isolated nucleic acid or its complement useful as a hybridization probe, wherein said nucleic acid comprises a nucleic acid having a sequence of nucleotides as set forth in SEQ ID NO: 2 or SEQ ID NO: 1, or a portion thereof.

38. (Withdrawn) A method of producing a plant capable of bearing substantially seedless fruits or substantially pollenless flowers, comprising the step of mutating endogenous DNA of said plant responsible for the formation of meiocytes, wherein said meiocyte formation is blocked, reduced or increased and said plant becomes capable of producing said seedless fruits or pollenless flowers.

39. (Withdrawn) A method according to claim 38, wherein said endogenous DNA is mutated by direct mutagenesis.

40. (Withdrawn) An isolated nucleic acid or its complement comprising nucleic acid coding for a mutant SPL polypeptide which blocks, reduces or increases the formation of meiocytes in a plant.

41. (Withdrawn) An isolated DNA comprising DNA having at least 8 consecutive nucleotides of bases 81-1024 of SEQ ID NO: 1, or a complement thereof.

42. (Withdrawn) The isolated DNA of claim 41, wherein said DNA has at least 15 consecutive nucleotides of bases 81 -1024 of SEQ ID NO: 1.

43. (Withdrawn) An isolated DNA wherein said isolated DNA consists of 8 or more consecutive nucleotides of a sequence of nucleotides 81-1024 of SEQ ID NO: 1, or a complement thereof.

44. (Withdrawn) The isolated DNA of claim 43, wherein said DNA consists of 15 or more consecutive nucleotides of a sequence of nucleotides 81-1024 of SEQ ID NO: 1.

45. (Withdrawn) An isolated nucleic acid sequence comprising a nucleic acid sequence as set forth in nucleotides -2690 to -1 of SEQ ID NO:18 or a nucleotide sequence which hybridizes to said sequence and promotes expression of a coding sequence operably linked to said nucleotide sequence.

46. (Withdrawn) An isolated nucleotide sequence or functional fragments thereof capable of regulating expression of an operably linked gene, said sequence comprising a nucleotide sequence located within nucleotide positions -2690 to -1 of the nucleotide sequence set forth in SEQ ID NO:18 or a nucleotide sequence which hybridizes to said

sequence and promotes expression of an operably linked gene.

47. (Withdrawn) An isolated DNA fragment for directing the expression of a foreign or endogenous gene in a cell, said fragment comprising a sequence as set forth in nucleotides -2690 to -1 of SEQ ID NO:18 operably linked to an ATG start codon of a foreign or endogenous gene.

48. (Withdrawn) An isolated nucleotide sequence as set forth in claim 45 or 46, operably linked to a foreign or endogenous functional gene.

49. (Withdrawn) A method for regulating the expression of a gene which comprises providing a gene of interest operably linked to an *SPL* gene promoter, transferring said operably linked gene to a cell and expressing said gene under gene expression conditions, wherein said *SPL* gene promoter comprises a nucleotide sequence located within nucleotide positions -2690 to -1 of the nucleotide sequence set forth in SEQ ID NO:18 or a nucleotide sequence which hybridizes to said sequence and promotes expression of an operably linked gene.

50. (Withdrawn) The method of claim 49, wherein said cell is a reproductive cell of a plant.

51. (Withdrawn) The method of claim 50, wherein said reproductive cell is a sporocyte.

52. (Withdrawn) The method of claim 50, wherein said gene encodes a ribonuclease, a transposase or a recombinase.

53. (Withdrawn) A plant comprising cells transformed with a foreign gene operably linked to and under the control of a nucleotide sequence as set forth in claim 45 or 46 49.

54. (New) An isolated nucleic acid or its complement according to claim 5 having at least about 80% identity to (a) or (b).
55. (New) An isolated nucleic acid or its complement according to claim 5 having at least about 90% identity to (a) or (b).
56. (New) An isolated nucleic acid or its complement according to claim 5 having at least about 95%-98% identity to (a) or (b).
57. (New) An isolated nucleic acid according to claim 6, wherein said protein comprises an amino acid sequence having at least about 90% sequence identity to the amino acid sequence set forth in SEQ ID NO:4.
58. (New) An isolated nucleic acid according to claim 6, wherein said protein comprises an amino acid sequence having greater than about 95% sequence identity to the amino acid sequence set forth in SEQ ID NO:4.
59. (New) An isolated nucleic acid or its complement according to claim 4, wherein said portions comprise at least 60 nucleotides.
60. (New) An isolated nucleic acid or its complement according to claim 5, wherein said portions comprise at least 60 nucleotides.
61. (New) An isolated nucleic acid or its complement according to claim 4, wherein said portions comprise at least 80 nucleotides.

62. (New) An isolated nucleic acid or its complement according to claim 5, wherein said portions comprise at least 80 nucleotides.